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ABSTRACT

This paper investigates the current teaching assignments of Michigan public school personnel in five categories (computer science, library media, vocational technical, industrial technology, and media specialist). The paper asks: How many of these professionals were employed in Michigan public schools in 1999-00? How many had endorsements for their teaching assignments? Were they employed in elementary, middle, or high school assignments? How many school districts employed technology personnel in Macomb, Oakland, and Wayne counties? and How many new provisional certificates were awarded in these endorsement fields in 1999-00? Data came from the Michigan Professional Personnel Register for 1999-00 and the Michigan Department of Education (new provisional teaching assignments and their endorsements and the numbers of school districts in each county). Overall, there was an inadequate supply of computer science teachers to provide the Michigan public school districts with the numbers they needed. Employment of library media personnel and vocational technical personnel was good in 1999-00, but there were too few provisional teaching certificates with an endorsement in industrial technology issued. Only about one-third of teachers in each area held certificates applicable to all grade levels. (SM)

Michigan Public School Personnel with Technology Related Assignments

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August 2000

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Michigan Public School Personnel With Technology Related Assignments

Gary R. Smith, Wayne State University (August 2000)

Background Information In August 2000 a group of educators was convened by the Office of Professional Preparation and Certification Services of Michigan Department of Education for the purpose of considering a teacher certificate endorsement in instructional technology. The group was composed of college and university representatives from the Consortium for Outstanding Achievement in Teaching with Technology (COATT) and the chairperson was Sue Wittick from the Teacher Certification Division. In addition to the college and university representatives, the group also included representatives from the Michigan Association for Computer-related Technology Users in Learning (MACUL), the Michigan Association for Media in Education (MAME), and other representatives from professional organizations which are actively supporting appropriate uses of technology in Michigan schools.

In Michigan public education, an endorsement on a teacher's certificate is an official recognition of a teacher's competence to teach a given academic subject. It also means that a college or university has established a program of study for that academic subject, and the teacher has successfully completed all of the requirements in the program for that endorsement. Ordinarily, an endorsement program requires a teacher to complete a minimum of 18 semester hours of coursework and clinical practice in a specific program area, e.g., mathematics, science, English, special education.

A teaching endorsement is an effort by the State of Michigan to ensure that students in Michigan Public Schools are being taught a given curriculum topic by a teacher who has studied that curriculum topic intensively and that person has also demonstrated teaching competencies under supervision

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of a qualified teacher in the subject. The absence of an endorsement raises doubts about the competence of an individual to provide a high quality of instruction for students who will usually spend an entire school year receiving instruction from a person whose competence is unknown.

Based upon the Michigan Technology Plan 1998, **technology** is defined as "...the systematic application of knowledge, materials, tools and skills to extend human capabilities;" and **instructional technology** is defined as "... the application of technology to the teaching and learning process."

One part of this group's charge was to identify those school personnel who were currently certified and employed by a Michigan Public School District with an assignment directly related to the use of technology in an instructional setting. There were at least five teaching assignments in which technology is implicit in the K-12 teaching assignment. Those teaching assignments and their endorsement or assignment codes are: Computer Science (NR), Library Media (ND), Vocational Technical (VT), Industrial Technology (IX), and Media Specialist (NV). The Media Specialist does not have an endorsement code.

School personnel in these five categories are not the only educators providing leadership in helping students use technology or assisting K-12 teachers infuse technology into their regular instructional program. However, teachers in these five professional groups have pursued a career and training in their specialized field and have been employed for the specific purpose of providing direct instruction to students using various skills, materials, and tools of technology.

This paper summarizes data collected to answer the following five questions with respect to the current teaching assignments of Michigan Public School personnel in these five endorsement fields:

1. How many of these professionals were employed in Michigan Public Schools in 1999-2000.
2. How many of these school personnel had endorsements for the teaching assignments of their employment?
3. Were these teachers employed in elementary, middle school, or high school assignments?
4. In Macomb, Oakland, and Wayne counties, how many school districts employed technology personnel?
5. How many new provisional certificates were awarded in these endorsement fields in 1999-2000?

Procedure: The primary source of data for this report was the Michigan Professional Personnel Register for 1999-2000. This data base provided information from each public school district in Michigan. It indicated the first assignment and second assignment for all professional school personnel employed by a school district. In addition to teachers and administrators, the Register included information about other school personnel, e.g., school nurses, psychologists, school social workers. For each person the Register indicated the teaching level and curriculum areas for which the person had achieved a teaching endorsement.

The FileMaker Pro program was used to identify subsets of the Register and extract those data for assignments in Computer Science (NR), Library Media (ND), Vocational Technical (VT), Industrial Technology (IX), and Media Specialist (NV). Frequency counts were obtained for each of those teaching assignments.

The information about new provisional teaching assignments and their endorsements was provided by the Office of Professional Preparation and Certification Services, Michigan Department of Education.

The numbers of school districts in each county were obtained from the homepage of the Michigan Department of Education <http://www.mde.state.mi.us> and each intermediate school district homepage.

Limitations: These data provide information for a single academic year. Therefore, it is not possible to infer trends or changes in employment of teachers with these assignments. It is also not possible to infer trends or changes in the production of newly qualified teachers with these endorsements or employment of experienced teachers who may have added an endorsement to their certificates.

There was some duplication of names of teachers in the Michigan Professional Personnel Register. The estimates of grade level assignments may err by 3% or 4% due to this duplication of names of school personnel.

Results: Table 1 shows the primary assignments and secondary assignments of teachers in these five areas. In 1999-2000 school year, the Michigan Public Schools employed 605 computer science teachers, 1103 Library media teachers, 1028 vocational technical teachers, and 341 media specialists, and 1348 industrial technology teachers.

Only 25% of the computer science teachers had an endorsement in that field. Over 80% of the library media teachers held an endorsement in their teaching field. More than 85% of the vocational technical teachers held an endorsement in their teaching field. Only 5% of the media specialists held an assignment in that field. More than 90% of the industrial technology teachers held an endorsement in their curriculum area.

As shown in Table 2, about one-third of the teachers in each technology area held certificates applicable to all grade levels.

At the elementary school level, there were very few persons with computer science, vocational technical, or

industrial technology assignments. There were 25% of the library media assignments and 43% of the media specialist assignments at the elementary school level.

The middle school assignments claimed 24% of the computer science assignments and 21% of the industrial technology assignments.

In the senior high schools there were 35% of the computer science assignments, 26% of the library media personnel, 68% of the vocational technical assignments, and 48% of the industrial technology assignments.

Computer Science: In Table 3 three large counties or intermediate school districts in southeastern Michigan have been selected to show the number of school districts which employed one or more computer science teachers in 1999-2000. Almost one-half of the school districts in each of these counties did not employ a single computer science teacher.

In Macomb County there were 10 of the 21 Public School Districts which did employ a computer science teacher, and less than 20% of the school districts in the county employed a computer science teacher with a corresponding endorsement.

In Oakland County there were 15 of the 28 school districts which employed a computer science teacher, and less than 20% of the districts employed a teacher to teach computer science content who also held an endorsement in that field.

In Wayne County, 18 of the 34 school districts employed a computer science teacher; and less than 30% of the districts employed a teacher who also held an endorsement in computer science.

Library Media: The employment of qualified persons in Library Media positions in the tri-county area school districts is substantially better than the employment of computer science teachers. Table 4 shows the number of librarians who were employed in school districts in the three

counties. A high percentage (90% or more) of the school districts in the three counties have one or more librarians in library media assignments. Less than 10% of the districts employed librarians who did not have their library media endorsement.

Vocational Technical: Table 5 shows the number of public school districts in the tri-county area where teachers of vocational technical classes were employed in 1999-2000. For those public school districts which employed vocational technical teachers, less than 15% of those districts employed teachers without the VT endorsement. Twenty of the Macomb County School Districts employed one or more teachers for vocational technical assignments, and only one district did not employ a teacher with an assignment in that field.

In Oakland County 20 of the 28 school districts employed vocational technical teachers, and 17 of the 20 districts employed teachers who had an endorsement in that field.

In Wayne County there were 22 of 34 public school districts which employed teachers in vocational technical assignments and one or more of the teachers in the 22 districts had an endorsement in the field. There were 12 public school districts in Wayne County which did not have any teachers in vocational technical assignments.

Media Specialist: As shown in Table 6, only four of the 21 public school districts in Macomb County employed a person in a media specialist position.

For Oakland County, 11 of the 28 school districts had teachers in media specialist assignments.

In Wayne County there were 9 of the 34 public school districts which had teachers in media specialist assignments.

Industrial Technology: Table 7 shows the number of public school districts in the tri-county area where teachers of industrial technology were employed in 1999-2000. Ninety

percent of the districts employed industrial technology teachers and all of those districts employed one or more teachers who held an endorsement in that field. Less than 11% of the tri-county districts did not have any industrial technology teachers.

Commentary: It is evident that there is not an adequate supply of computer science teachers to provide the 500+ Michigan Public School Districts with at least one qualified teacher of computer science. The heavy demand by business and industry for computer science personnel and the attractive salaries have undoubtedly reduced the number of computer science graduates who would pursue teaching as a career.

Table 8 shows the number of new provisional certificates issued in 1999-2000 with an endorsement in one of these five technology areas. It took the resources of 14 Michigan colleges or universities to produce 45 graduates with a teaching endorsement in a technology related field. This group of 45 certificates is among the total of 3130 new provisional teaching certificates issued by the Michigan Department of Education in 1999-2000. This is a dismal record of planning and producing personnel needed by the Michigan Public Schools.

Only 22 of those new certificates were awarded to graduates with an academic major or minor course of study in computer science.

The current employment of library media personnel in the schools appears to be good, but only 4 provisional teaching certificates in 1999-2000 were issued for library media. This is not adequate for replacement of library media personnel who retire, move to another state, or seek employment in business or industry.

Employment of vocational technical personnel in Michigan Public School Districts is similar to the library media situation. Only 7 persons received a provisional teaching

certificate with vocational technical endorsement in 1999-2000.

Only 12 initial provisional teaching certificates with an endorsement in industrial technology were issued by the Michigan Department of Education in 1999-2000.

In order to improve the supply of qualified technology personnel in Michigan Public Schools, there is at least one short term solution and one long term solution. A short term approach would be to identify those teachers in elementary and secondary schools who have the interest and enthusiasm to use technology in their classroom. These teachers enjoy using various tools and opportunities afforded by technology. As time permits, they help their colleagues to explore and solve problems using technology with their students.

The individuals in this group are exactly the teachers which COATT is seeking to identify and reward for their accomplishments using technology. The COATT initiative provides the opportunity to identify and acknowledge those practicing teachers who demonstrate exemplary uses of technology in their classes every day. It appears to this writer to be a short term strategy because the COATT membership is relatively small and there is a large number of inservice teachers who could apply for COATT review, if the award is realistic and meaningful, e.g., financial award, released time in their school to help other teachers.

A long term strategy is to build upon the COATT initiative to create an endorsement for instructional technology which these teachers could achieve in a reasonable time. The courses and clinical experiences for this endorsement could be defined by each Michigan college or university with input from professional organizations, including MACUL, MAME, and others. Persons seeking this endorsement would study and practice the latest innovations in using technology with their students. They could also provide leadership in support of their colleagues in their school. They would be expected to conduct action research on

problems which they and their colleagues encountered using technology to support their students' learning. The endorsement programs proposed by the colleges and universities would be reviewed by the Teacher Certification Division of the Michigan Department of Education and ultimately reviewed for approval by the Michigan State Board of Education.

TABLE 1

Michigan School Personnel with Teaching Assignments and Endorsements in the following areas:
Computer Science, Library Media, Vocational Technical, Media Specialist, and Industrial Technology

<u>Subject</u>	<u>Primary Teaching Assignment</u>	<u>Number with Endorsement</u>	<u>Secondary Teaching Assignment</u>	<u>Number with Endorsement</u>	<u>Total with Assignment</u>	<u>Total Number with Endorsement</u>
Computer Science (NR)	400	115	205	33	605	148
Library Media (ND)	1069	870	34	25	1103	895
Vocational Technical (VT)	907	625	121	282	1028	907
Media Specialist (NV)	319	NA	22	NA	341	NA
Industrial Technology (IX)	1253	1176	95	75	1348	1251

NA - Does not apply because an endorsement for Media Specialist is not available.

TABLE 2

Estimated Teaching Levels of all Teachers Assigned to Teach Computer Science, Library Media, Vocational Technical, Media Specialist, or Industrial Technology in 1999-2000

<u>Assignment</u>	<u>All Grades</u>	<u>Elementary</u>	<u>Middle School</u>	<u>Junior Senior High</u>	<u>Senior High</u>	<u>Totals</u>
Computer Science (NR)	226	22	142	87	128	605
% of Total	37.4%	3.6%	23.5%	14.4%	21.2%	
Library Media (ND)	353	274	184	54	238	1103
% of Total	32.0%	24.8%	16.7%	4.9%	21.6%	
Vocational Technical (VT)	307	0	20	115	586	1028
% of Total	29.9%	0.0%	1.9%	11.2%	57.0%	
Media Specialist (NV)	51	147	61	13	69	341
% of Total	15.0%	43.1%	17.9%	3.8%	20.2%	
Industrial Technology (IX)	406	8	280	539	115	1348
% of Total	30.1%	0.6%	20.8%	40.0%	8.5%	

TABLE 3

Public School Districts in Macomb, Oakland, and Wayne Counties which have Computer Science Teaching Assignments

<u>County</u>	<u>Total Number of Districts in County</u>	<u>Public School Districts with Computer Science Assignments</u>	<u>Public School Districts with Computer Science Teacher Endorsements</u>	<u>Public School Districts without any Computer Science Assignments</u>
Macomb County	21	10	4	11
Oakland County	28	15	5	13
Wayne County	34	18	10	16

TABLE 4

Public School Districts in Macomb, Oakland, and Wayne Counties which have Library Media
Teaching Assignments

County	Public School Districts In County	Public School Districts with Library Media Assignments	Public School Districts with Library Media Endorsements	Public School Districts without any Library Media Assignments
Macomb County	21	20	20	1
Oakland County	28	25	23	3
Wayne County	34	32	30	2

TABLE 5

Public School Districts in Macomb, Oakland, and Wayne Counties which have Vocational Technical Teaching Assignments

<u>County</u>	<u>Public School Districts in County</u>	<u>Public School Districts with Vocational Technical Assignments</u>	<u>Public School Districts with Vocational Technical Endorsements</u>	<u>Public School Districts without Vocational Technical Assignments</u>
Macomb County	21	20	19	1
Oakland County	28	20	17	8
Wayne County	34	22	22	12

TABLE 6

Public School Districts in Macomb, Oakland, and Wayne Counties which have Media Specialist
Teaching Assignments

<u>County</u>	<u>Public School Districts in County</u>	<u>Public School Districts with Media Specialist Assignments</u>	<u>Public School Districts with Media Specialist Endorsements</u>	<u>Public School Districts without any Media Specialist Assignments</u>
Macomb County	21	4	NA	17
Oakland County	28	11	NA	17
Wayne County	34	9	NA	25

NA - Does not apply because an endorsement for Media Specialist is not available.

TABLE 7

Public School Districts in Macomb, Oakland, and Wayne Counties which have Industrial Technology Teaching Assignments

<u>County</u>	<u>Public School Districts in County</u>	<u>Public School Districts with Industrial Technology Assignments</u>	<u>Public School Districts with Industrial Technology Endorsements</u>	<u>Public School Districts without any Industrial Technology Assignments</u>
Macomb County	21	19	19	2
Oakland County	28	25	25	3
Wayne County	34	32	32	2

TABLE 8

Provisional Teaching Certificates issued in 1999-2000 with Endorsements in Library Media, Computer Science, Vocational Technical, Media Specialist, and Industrial Technology

<u>Institution</u>	<u>Library Media (ND)</u>	<u>Computer Science (NR)</u>	<u>Vocational Technical (VT)</u>	<u>Media Specialist (NV)</u>	<u>Industrial Technology (IX)</u>	<u>Totals</u>
Andrews University		1				1
Adrian College						0
Ferris State University		2	1			3
Central Michigan University		1	3		3	7
Hope College		1				1
Eastern Michigan University		4			2	6
Michigan State University		5				5
Northern Michigan University		1				1
Oakland University		2				2
University of Detroit-Mercy	1	1				2
University of Michigan-Flint		2				2
Wayne State University	2	2	1		2	7
Western Michigan University			2		5	7
University of Michigan-Ann Arbor	1					1
Totals	4	22	7	NA	12	45

(Source: Office of Professional Preparation and Certification Services, Michigan Department of Education, Lansing, Michigan)